

WHAT IS CLAIMED IS:

1. A synchronous semiconductor memory device
in which an operation of a row-system circuit is
started in response to input of a first command and
5 an operation of a column-system circuit is started in
response to input of a second command, comprising:

10 a first circuit configured to generate a first
signal for a normal operation mode based on a command
detection signal which is activated in response to the
first command,

15 a second circuit configured to receive the command
detection signal, an operation mode specifying signal
which selectively specifies one of the normal operation
mode and test mode and a selection signal used to
select at least part of the memory cells in a memory
cell array and generate a second signal for a test mode
to synchronize start timing of the operation of the
row-system circuit with input timing of the second
command, and

20 a third circuit configured to select the first
signal output from the first circuit when the normal
operation mode is specified by the operation mode
specifying signal, select the second signal output from
the second circuit when the test mode is specified, and
25 generate a third signal used to activate at least part
of the memory cells in the memory cell array based on
a selected one of the first and second signals and the

selection signal.

2. A synchronous semiconductor memory device according to claim 1, wherein the second command is input in a cycle next to a cycle in which the first
5 command is input.

3. A synchronous semiconductor memory device according to claim 1, wherein the second circuit includes a delay circuit which delays start timing of the operation of the row-system circuit with respect
10 to the second command in one clock unit or half clock unit.

4. A synchronous semiconductor memory device according to claim 1, wherein the selection signal is a signal which selects a bank in the memory cell array
15 and the third signal is a signal which activates the selected bank in the memory cell array.

5. A synchronous semiconductor memory device in which an operation of a row-system circuit is started in response to input of a first command and
20 an operation of a column-system circuit is started in response to input of a second command, comprising:

25 a first circuit configured to generate a first signal for a normal operation mode based on a command detection signal which is activated in response to the first command,

a second circuit configured to receive the command detection signal, an operation mode specifying signal

which selectively specifies one of the normal operation mode and test mode and a selection signal used to select at least part of the memory cells in a memory cell array and generate a second signal for a test mode 5 to synchronize start timing of the operation of the row-system circuit with the clock cycle time in which a column selection line is activated, and

10 a third circuit configured to select the first signal output from the first circuit when the normal operation mode is specified by the operation mode specifying signal, select the second signal output from the second circuit when the test mode is specified, and generate a third signal used to activate at least part 15 of the memory cells in the memory cell array based on a selected one of the first and second signals and the selection signal.

20 6. A synchronous semiconductor memory device according to claim 5, wherein the second command is input in a cycle next to a cycle in which the first command is input.

25 7. A synchronous semiconductor memory device according to claim 5, wherein the second circuit includes a delay circuit which delays start timing of the operation of the row-system circuit with respect to the second command in one clock unit or half clock unit.

8. A synchronous semiconductor memory device

according to claim 5, wherein the selection signal is a signal which selects a bank in the memory cell array and the third signal is a signal which activates the selected bank in the memory cell array.

5 9. A synchronous semiconductor memory device in which an operation of a row-system circuit is started in response to input of a first command and an operation of a column-system circuit is started in response to input of a second command, comprising:

10 a first circuit configured to generate a first signal for a normal operation mode based on a command detection signal which is activated in response to the first command,

15 a second circuit configured to receive the command detection signal, an operation mode specifying signal which selectively specifies one of the normal operation mode and test mode and a selection signal used to select at least part of the memory cells in a memory cell array and generate a second signal for a test mode which sets start timing of the operation of the row-system circuit by sequentially delaying start timing of the operation of the row-system circuit with respect to the second command in one of a half-clock unit and one clock unit and selecting a delay amount based on a timing control signal, and

20 a third circuit configured to select the first signal output from the first circuit when the normal

operation mode is specified by the operation mode specifying signal, select the second signal output from the second circuit when the test mode is specified, and generate a third signal used to activate at least part 5 of the memory cells in the memory cell array based on a selected one of the first and second signals and the selection signal.

10. A synchronous semiconductor memory device according to claim 9, wherein the second command is input in a cycle next to a cycle in which the first command is input.

15. A synchronous semiconductor memory device according to claim 9, wherein the second circuit includes a timing control circuit which selects a delay amount based on a timing control signal.

20. A synchronous semiconductor memory device according to claim 9, wherein the selection signal is a signal which selects a bank in the memory cell array and the third signal is a signal which activates the selected bank in the memory cell array.

25. A method for testing a synchronous semiconductor memory device in which an operation of a row-system circuit is started in response to input of a first command and an operation of a column-system circuit is started in response to input of a second command, comprising:

inputting an operation mode specifying signal

which selectively specifies one of a normal operation mode and test mode,

inputting a first command,

5 inputting a second command in a cycle next to a cycle in which the first command is input,

synchronizing start timing of the operation of the row-system circuit with input timing of the second command when the test mode is specified by the operation mode specifying signal,

10 activating at least part of memory cells in a memory cell array, and

making a screening test with respect to the activated memory cell.

14. A test method for the synchronous 15 semiconductor memory device according to claim 13, wherein the second command is input in a cycle next to a cycle in which the first command is input.

15. A test method for the synchronous semiconductor memory device according to claim 13 in which the screening test having a guard band is made and which 20 further comprises advancing switching timing of a column gating release signal for row-system control before making the screening test.

16. A method for testing a synchronous 25 semiconductor memory device in which an operation of a row-system circuit is started in response to input of a first command and an operation of a column-system

circuit is started in response to input of a second command, comprising:

inputting an operation mode specifying signal which selectively specifies one of a normal operation mode and test mode,

5 inputting a first command,

inputting a second command in a cycle next to a cycle in which the first command is input,

10 synchronizing start timing of the operation of the row-system circuit with the clock cycle time in which a column selection line is activated when the test mode is specified by the operation mode specifying signal,

activating at least part of the memory cells in a memory cell array, and

15 making a screening test with respect to the activated memory cell.

17. A test method for the synchronous semiconductor memory device according to claim 16, wherein the second command is input in a cycle next to a cycle in which the first command is input.

18. A test method for the synchronous semiconductor memory device according to claim 16 in which the screening test having a guard band is made and which further comprises advancing switching timing of a column gating release signal for row-system control before making the screening test.

25 19. A method for testing a synchronous

semiconductor memory device in which an operation of
a row-system circuit is started in response to input of
a first command and an operation of a column-system
circuit is started in response to input of a second
command, comprising:

- 5 inputting an operation mode specifying signal
 which selectively specifies one of a normal operation
 mode and test mode,
- 10 inputting a first command,
- 10 inputting a second command in a cycle next to
 a cycle in which the first command is input,
- 15 delaying start timing of the operation of the
 row-system circuit with respect to the second command
 in one of a half-clock unit and one clock unit when the
 test mode is specified by the operation mode specifying
 signal,
- 20 selecting start timing of the operation of the
 row-system circuit based on a timing control signal,
 activating at least part of the memory cells in
 a memory cell array, and
- 20 making a screening test with respect to the
 activated memory cell.

20. A test method for the synchronous semiconductor memory device according to claim 19, wherein the
25 second command is input in a cycle next to a cycle in
 which the first command is input.

21. A test method for the synchronous

semiconductor memory device according to claim 19 in
which the screening test having a guard band is made
and which further comprises advancing switching timing
of a column gating release signal for row-system
control before making the screening test.